Abstract of the Invention

The present invention involves the use of photosensitizers to provide antibacterial surfaces on consumer and industrial items. This approach avoids the used of chemicals and solutions that may be toxic. The inventions also avoids the use of chemical compositions that might form degradation products which may be unacceptable to healthy persons or irritating to persons who may have allergies or are otherwise sensitized. According to the invention, photosensitizers with specific properties and specific design features are selected to make practical use of photosensitizers in the consumer and industrial market place. It is important to select a photosensitizer with an activation spectrum that is matched to the environmental conditions under which the surface to be protected is required to exhibit its antimicrobial properties. This means that the illumination energy and intensity levels expected need to yield enough singlet oxygen to destroy the targeted microbes. It is also possible to select photosensitizers that are activated only by wavelengths prominently present in certain illumination lamps, such as those lamps commonly present in a laboratories, medical offices, pharmacies and food service areas, thereby making the surfaces antimicrobial only on demand when the illumination lamps are turned on.